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EMBRYOLOGY.[1]

Anatomy of a Human Embryo.[2]—Dr. F. Mall has made a very complete study of the anatomy of an embryo of 7 mm. having about 27 somites and an age closely determined as twenty-six days.

The embryo was cut into 351 transverse sections and every other one of these drawn upon wax plates 2 mm. thick. The wax sections were kept in normal relative position in a plaster mould while the various internal organs were gradually dissected out.

In this way a complete model of the internal organs, as solid bodies seen by removing the overlying tissues from one side of the body, was obtained and subsequently reproduced in a colored lithograph.

A most striking and instructive demonstration of the anatomy of the embryo at this early period is thus represented in Plate 30. The brain and medullary tube, spinal ganglia and auditory vesicle, digestive tract with its branchial pouches, bronchi, pancreas, liver and cloaca together with the Wolffian bodies and ducts, the venous and the arterial parts of the heart and vascular trunks are all represented as solid objects seen in perspective and in a distinguishing color for each system.

The body cavity was studied separately from permanent metal casts made by first casting the hollowed out space in the wax model with Wood's metal, then making a plaster cast of this and finally filling the plaster cast with solder. In this way is shown the origin of the lesser peritoneal cavity as a right diverticulum, near the stomach, communicating with the main cœlom by a constriction that remains as the foramen of Winslow. This becomes of considerable interest from the comparative study made by the author in a preceding number of the same journal, for it is there shown that the single right diverticulum of higher mammals is found in some lower ones and the chick, along with a left diverticulum that early disappears. In some reptiles again both right and left diverticula remain in the adult though even here the right is larger. The ichthyopsida appear to have neither of those diverticula.

Thyreoglossal Tract and the Hyoid.[3]—From the study of sections of a human embryo of 16 mm. Prof. His is led to bring his views regarding the connection of the median *anlage* of the thyroid with the cæcal foramen of the tongue into harmony with the anatomical facts revealed by A. Streckeisen. In this embryo the hyoid comes into intimate contact with the epithelial connection of cæcal foramen and median thyroid and is thus well placed for the formation of those inclusions of gland-tubes within the hyoid described by Streckeisen. Incidentally the study of another embryo of 9·1 mm. leads the author to infer that this median *anlage* may aid in the formation of the lateral thyroids.

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[1] This department is edited by Prof. E. A. Andrews, Johns Hopkins University.

[2] Journal of Morphology, 1891, 17 pps. 2 Pls.

[3] Archiv. f. Anat. Phys. 1891, 6 pps.

Origin of Spinal Ganglia in Man.[1]—Study of a human embryo of 2·5 mm. leads Dr. M. V. Lenhossék to the following conclusions: The medullary plate is at first a median thickening of ectoblast with no thin central region to give it a bilateral or double character. The material for the formation of spinal ganglia first appears as a strand of rounded ectoblast cells, not segmented, along each side of the medullary plate. As the medullary plate closes these two strands unite to form a wedge-shaped mass appearing as cross section as the keystone of the closed medullary tube. Though thus closely united with the tube these spinal ganglian cells grow out again and allow the tube to close a second time without their aid. In this outgrowth the first segmentation appears, the outgrowth being greater in the mesoblastic somite regions, hence the spinal ganglia are from this first appearance intervertebral in position. Later stages are not given, but with the aid of sections of chick and of Siredon the author extends the above view to all vertebrates, explaining away the difficulties offered by certain observations of others; harmonizing the ideas of His and Balfour and in general results agreeing with Beard.

Somites of Human Embryos.[2]—From the embryo mentioned in the last notice and three others of 4·25, 4·5 and 10·2 mm. and with the aid of a comparative study of some lower vertebrates, J. Köllmann obtains facts and explanations of facts that form an interesting contribution to the subject of metamerism in higher vertebrates, though the evidence presented is not all of as convincing a character as might be desired. The chief points may be briefly outlined as follows:

The myotomes (protovertebræ) have at first a cavity, myocœl, which is subsequently filled by an ingrowth of the inner wall. The

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[1] Archiv. f. Anat. Phys., 1891, 24 pps. 1 Pl.

[2] Archiv. f. Anat. Phys., 1891, 44 pps., 2 Pls.

inner wall splits open and the ingrowth of cells passes out and ventral to the medulla as the sclerotome or *anlage* of the vertebra. The split becomes the intervertebral cleft or foramen. As the myotome gives rise directly to the sclerotome there is no secondary segmentation of the vertebral column, but rather a proximal dislocation of each sclerotome by the length of half a myotome. After this skeletegenous material has left the myotome its walls give rise to muscles; the inner wall first, forming the dorsal part of the lateral musculature; the outer wall, in man, growing ventrally to furnish muscles for the ventral body wall, digestive tract and also the limbs. The muscles in the limbs are formed from several myotomes, are representations of several metameres, moreover all the segmentation seen in the ventral region and in the limbs is not formed from the lateral plate, but in the above outgrowth into them of parts of the axial myotomes. These muscle buds growing into the limb surround the axial *anlage* of the future skeleton.

Sections of the embryo of 2·5 mm. with 13 somites, show a marked modification of the ectoblast near the intermediate cell mass, becoming a cellular ingrowth posteriorly in older embryos. This is regarded by the author as undoubtedly an ectodermal component of the Wolffian duct.

ENTOMOLOGY.[1]

Descriptions of New North American Bees.—The following species of *Halictus* have the head and thorax and sometimes the abdomen, greenish or bluish, the surface of mesothorax minutely roughened, except in 5, and with a distinct punctuation, the hind spur with few long teeth; and are arranged according to size, beginning with the largest. The following synopsis may aid in separating them:

Mesothorax coarsely reticulated on the sides;
Head greenish, thorax bluish, legs dark, 1. *reticulatus.*
Head and thorax bluish, legs mostly yellow, 2. *hartii.*
Mesothorax punctured, not reticulated;
Head, thorax and abdomen greenish;
  Pubescence of abdomen yellowish, thin, not concealing surface, 3. *floridanus.*

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[1] Edited by Prof. C. M. Weed, Hanover, N. H.